Defined Benefit Program
Actuary's Certification Letter

A MILLIMAN GLOBAL FIRM

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Teachers' Retirement Board
California State Teachers' Retirement System

Re: Valuation of the Defined Benefit Program

Dear Members of the Board:

We have performed an actuarial valuation of the Defined Benefit Program of the California State Teachers' Retirement System as of June 30, 2001. In our opinion, the DB Program is an actuarially sound system based on the current actuarial assumptions. Our findings indicate the projected income stream from the contributions mandated by the Education Code will be sufficient to pay the Normal Costs and to amortize the Unfunded Actuarial Obligation over 29 years as of June 30, 2001. By comparison, the DB Program is not as well funded as it was in the previous years, due primarily to investment returns during the year being less than the long-term actuarial assumption of 8% per year.

Actuarial valuations are normally performed every two years, as of June 30 of each odd-numbered year. Special valuations were prepared as of June 30, 1998 and 2000. An actuarial valuation was not performed as of June 30, 2002, so the 2001 report is the latest available.

In preparing the 2001 valuation, we relied upon the financial and membership data furnished by the System, and the Report of Independent Accountants prepared by PricewaterhouseCoopers LLP. Although we did not audit this data, we compared the data for this and the prior valuation and tested for reasonableness. Based on these tests, we believe the data to be sufficiently accurate for the purposes of our calculations.

Milliman did not prepare Schedules I and II, nor the summary of actuarial methods and assumptions in Schedule II of the Financial Section, nor the information included in this Actuarial Section of the 2003 Comprehensive Annual Financial Report. However, the actuarial information contained in Schedule I of the Financial Section and in this Actuarial Section was derived from our June 30, 2001 actuarial valuation report.

The Teachers' Retirement Board has sole authority to determine the actuarial assumptions and methods used for the DB Program. The Board adopted all of the actuarial methods and assumptions used in the 2001 valuation.

The findings have been determined according to actuarial assumptions and methods that were chosen on the basis of recent experience of the DB Program and of current expectations concerning future economic conditions. In our opinion, the assumptions used in the actuarial valuation are appropriate for purposes of the valuation, are

internally consistent, and reflect reasonable expectations. The assumptions represent our best estimate of future conditions affecting the DB Program. Nevertheless, the emerging costs of the DB Program will vary from those presented in this report to the extent that actual experience differs from that projected by the assumptions.

The actuarial valuation was prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the applicable Standards of Practice adopted by the Actuarial Standards Board of the American Academy of Actuaries. In addition, the assumptions and methods used meet the parameters set for disclosures by Statement No. 25 of the Governmental Accounting Standards Board.

The undersigned is an independent actuary, a Fellow of the Society of Actuaries, a Member of the American Academy of Actuaries, an Enrolled Actuary, and experienced in performing valuations for large public employee retirement systems.

In conclusion, the DB Program of the California State Teachers' Retirement System is an actuarially sound system based on the current actuarial assumptions.

Respectfully submitted,

Mark C. Johnson, F.S.A., M.A.A.A., E.A.
Principal and Consulting Actuary

Defined Benefit Program

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

CalSTRS, through its consulting actuary, performs an experience study every four years to determine appropriate demographic and economic assumptions. These assumptions are then applied when the consulting actuary performs an actuarial valuation to monitor the funding status of the Defined Benefit Program. The most recent experience study for the period 1995 through 1999 was completed as of June 30, 1999. The study was adopted by the Teachers' Retirement Board on February 3, 2000. The most recent actuarial valuation was completed as of June 30, 2001, and adopted by the Teachers' Retirement Board on May 2, 2002. The following summary and tables were prepared by the CalSTRS staff. All information is considered in the June 30, 2001, actuarial valuation.

Following are the assumptions adopted by the Teachers' Retirement Board for this program.

- Investment return rate is 8.00 percent.
- Method used to value program assets for actuarial valuation purposes: Expected actuarial value adjusted for one-third of the difference between actual market value and expected actuarial value.
- Assumption for general wage increase is 4.25 percent of which 3.5 percent is due to inflation and .75 percent is due to expected gains in productivity.
- The actuarial cost method used by the program is the entry age normal actuarial cost method, with actuarial gains and losses amortized over a period that does not exceed 30 years.
- The extent to which benefits are expected to increase as a result of cost-of-living type adjustments is an annual 2 percent increase to the initial allowance beginning on September 1 following the first anniversary of the effective date of the allowance. Since 1972, this increase is applied to all eligible continuing allowances.

Table 1 Post-retirement mortality table for sample ages

Age	Male	Female
	1999 CalSTRS Retired–M	1999 CalSTRS Retired–F
50	0.19%	0.12%
55	0.32	0.19
60	0.56	0.34
65	1.02	0.67
70	1.80	1.18
75	2.85	1.83
80	5.02	3.78
85	9.42	6.50
90	14.75	11.63
95	23.36	18.62

Table 2 Probabilities of retirement for sample ages

Age	Male	Female
55	5.0%	6.0%
60	20.0	12.0
65	20.0	19.0
70	100.0	100.0

Discussion of recent changes in:

The nature of the program–Since the last experience study as of June 30, 1999, program amendments have been made that have affected both the June 30, 2000 and the June 30, 2001 actuarial valuations. The program amendment effective January 1, 2000, is: Minimum Guarantee payable to certain benefit recipients with at least 20 years of creditable service, equal to $15,000, increasing in $500 increments for each additional year of service to $20,000 at 30 or more years of credited service. The program amendments effective January 1, 2001, were:

- Final Compensation based upon the highest average consecutive 12-month period with 25 years of credited service.
- 25 percent of the 8 percent member contributions allocated to the new Defined Benefit Supplement Program.
- Longevity Bonus of an additional $200, $300, or $400 per month in Defined Benefit Program benefits with 30, 31 or 32 or more years of credited service.
- An ad hoc minimum guarantee of up to 6 percent, based on the initial allowance plus the simple 2 percent benefit improvement, depending upon the year in which the benefit began. This ad hoc was not initially payable until July 1, 2001.

Actuarial assumptions–The actuarial valuation utilizes various methods and two different types of assumptions: economic and demographic. Economic assumptions are related to the general economy and its impact on CalSTRS or to the operation of the membership. Demographic assumptions predict the future experience of the membership with respect to eligibility and benefits and are directly related to the specific experience of CalSTRS members.

Economic assumptions: The two major economic assumptions are investment return and wage growth and each is affected by the underlying assumed rate of inflation. Table 5 provides the economic actuarial assumptions for this program as reflected in the most recent actuarial valuation for the program (as of June 30, 2001).

Demographic assumptions: Tables 1–4 and 6–11 provide demographic assumption information for this program as reflected in the most recent actuarial valuation for the program (as of June 30, 2001).

Table 3 Probabilities of withdrawal from active service before age and service retirement for sample ages

	Entry Ages			
Duration	**25–29**	**30–34**	**35–39**	**40+**
Male				
1	12.5%	12.5%	12.5%	12.5%
2	9.5	9.2	9.2	9.5
3	6.8	6.8	6.8	7.2
4	5.8	5.8	5.8	6.2
5	4.2	4.2	4.2	4.2
10	2.0	2.0	2.0	2.4
15	1.1	1.1	1.2	
20	0.6	0.6		
25	0.5			
Female				
1	10.0%	10.0%	10.0%	10.0%
2	8.3	8.3	7.5	6.8
3	7.3	6.5	5.5	5.3
4	7.1	5.6	4.5	4.0
5	5.8	4.2	3.5	3.0
10	2.0	1.7	1.4	1.6
15	0.9	1.0	0.9	
20	0.7	0.9		
25	0.6			

Table 4 Assumption for pay increases due to promotions and longevity for sample ages (exclusive of the assumed general wage increase, which includes inflation)

	Entry Ages					
Duration	**Under 25**	**25–29**	**30–34**	**35–39**	**40–44**	**45 +**
1	5.7%	5.3%	5.1%	4.9%	4.9%	3.5%
10	3.2	3.0	2.7	2.3	2.2	1.6
20	1.3	1.2	1.1	0.8	0.8	0.6
30	0.9	0.7	0.6	0.5		

Table 5 Economic assumptions

Consumer Price Inflation	3.5%
Investment Yield	8.00
Wage Inflation	4.25
Interest on Member Accounts	6.00
Growth in Active Membership	0.00
Administrative Expenses	0.00*

** Provided by gross investment return*

Table 6 Mortality assumptions

Retired Members

Male	1999 CalSTRS Retired-M
Female	1999 CalSTRS Retired-F

Active Members

Male	1999 CalSTRS Retired-M (-2)
Female	1999 CalSTRS Retired-F (-2)

Beneficiaries

Male	1999 CalSTRS Beneficiary-M
Female	1999 CalSTRS Beneficiary-F

Pre-1972 Disabilities

Male	1951 GAM-M (-1)
Female	1951 GAM-M (-7)

Table 7 Termination from disability due to death

Male	1994 GAM-M (Min. 2.5% with select rates in first 3 years)
Female	1994 GAM-F (Min. 2.2% with select rates in first 3 years)

Table 8 Service retirement (sample ages)

	Benefits	
	Pre-1999	1999
Male		
55	5.8%	5.0%
60	25.0	20.0
65	20.0	20.0
70	100.0	100.0
Female		
55	7.0%	6.0%
60	22.0	12.0
65	18.0	19.0
70	100.0	100.0

Table 9 Disability

Rate of Disability (sample ages)

Coverage A

Male	30	0.030%
	40	0.081
	50	0.159
Female	30	0.030%
	40	0.090
	50	0.219

Coverage B

		Entry Age Under 40	Entry Age 40+
Male	30	0.030%	
	35	0.051	
	40	0.120	
	45	0.150	0.196%
	50	0.195	0.288
	55	0.270	0.390
Female	30	0.030%	
	35	0.051	
	40	0.090	
	45	0.141	0.231%
	50	0.231	0.360
	55	0.318	0.459

Table 10 Withdrawal, all terminations

Rates of termination by sample duration of membership and sample entry age

	Sample Entry Ages			
Duration	25–29	30–34	35–39	40+
Male				
1	12.5%	12.5%	12.5%	12.5%
2	9.5	9.2	9.2	9.5
3	6.8	6.8	6.8	7.2
4	5.8	5.8	5.8	6.2
5	4.2	4.2	4.2	4.2
10	2.0	2.0	2.0	2.4
15	1.1	1.1	1.2	
20	0.6	0.6		
25	0.5			
Female				
1	10.0%	10.0%	10.0%	10.0%
2	8.3	8.3	7.5	6.8
3	7.3	6.5	5.5	5.3
4	7.1	5.6	4.5	4.0
5	5.8	4.2	3.5	3.0
10	2.0	1.7	1.4	1.6
15	0.9	1.0	0.9	
20	0.7	0.9		
25	0.6			

Probability of refund by sample durations of membership and sample entry ages

	Sample Entry Ages			
Duration	25–29	30–34	35–39	40+
Male				
Under 5	100%	100%	100%	100%
10	40	40	45	40
15	40	35	35	
20	35	30		
25	20			
Female				
Under 5	100%	100%	100%	100%
10	25	30	30	25
15	20	30	20	
20	20	20		
25	20			

Table 11 Promotional salary increases (assumption for salaries due to promotions and longevity, exclusive of the assumed general wage increase)

	Sample Entry Ages (Unisex)					
Duration	**Under 25**	**25–29**	**30–34**	**35–39**	**40–44**	**45+**
1	5.7%	5.3%	5.1%	4.9%	4.9%	3.5%
10	3.2	3.0	2.7	2.3	2.2	1.6
20	1.3	1.2	1.1	0.8	0.8	0.6
30	0.9	0.7	0.6	0.5		

ACTUARIAL METHODS

Actuarial Cost Method	Entry Age Normal
Asset Valuation Method	Expected Value with one-third adjustment to Market Value (3-Year Asset Smoothing)

The asset smoothing method projects an Expected Value of Assets using the assumed rate of investment return, then one-third of the difference between the Expected Value and the Market Value is recognized in the Actuarial Value of Assets.

CalSTRS contracts for many actuarial services. The current contractor, Milliman USA, has been the program's actuary since January 15, 2000.

The data displayed in Table 12 is as of June 30 of the specified year. Other information, specifically annual payroll amounts, reported in the financial section of this report will generally not be consistent. The reason for this is that the financial data reflects payroll for all individuals who were active during the year, while Table 12 only includes those individuals who are active as of June 30. It does not include those individuals who were active at some point during the year but not as of June 30.

Amounts provided in Table 13 represent the status of the population as of June 30 of the indicated year. The information provided in the Removed From Rolls and Rolls End of Year columns include the application of the annual post-retirement 2 percent not-compounded cost-of-living adjustment.

The data provided for each year end in Table 13 is a snapshot of the population taken following year-end closing for the indicated period. It is likely adjustments will be made subsequent to this closing. No attempt is made to update the data in Table 13 for these adjustments.

Because of the potential for post-closing adjustments that are not updated in Table 13, and for post-retirement adjustments that are included in the individual accounts rather than separately maintained, any update of a prior end-of-year total using additions and deletions from the next year most likely will not equal the total provided for the next year.

An experience analysis was performed for the program in 1995 and again in 1999. As a result of the performance of these studies, changes were made to the actuarial assumptions and to the funding methods. The following significant plan changes have taken place during the time depicted in Table 14. These program amendments include:

Effective January 1, 1999

- Increased age factor for members who retire after age 60
- Career factor for members who retire with more than 30 years of service
- Service Credit for unused sick leave

Effective January 1, 2000

- Minimum benefit payable to certain benefit recipients with at least 20 years of creditable service. Minimum benefit is equal to $15,000 with 20 years of service increasing in $500 increments for each additional year of service to $20,000 if the member had 30 or more years of credited service.

Table 12 Schedule of active member valuation data

Date (as of June 30) [1]	Number	Annual Payroll	Annual Average Pay	% Increase In Average Pay
1995	327,513	$12,411,264,262	$37,895	1.0%
1997	364,000	14,371,068,403	39,481	2.3
1998	385,530	15,725,658,541	40,790	3.3
1999	402,220	17,007,886,951	42,285	3.7
2000	420,530	18,224,271,726	43,336	2.5
2001	428,741	20,494,151,991	47,801	10.3

(1) No actuarial report is prepared in even numbered years, except for June 30, 1998 and June 30, 2000 reports.

Table 13 Schedule of retired members and beneficiaries added to and removed from rolls (dollars in thousands)

Date (as of June 30)	Added to Rolls		Removed from Rolls		Rolls–End of Year		% Increase in Annual Allowances	Average Annual Allowances
	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances		
1998	7,996	$206,368	4,908	$64,640	157,747	$2,985,017	7.3%	$18,923
1999	7,874	236,923	5,105	69,463	161,457	3,220,227	7.9	19,945
2000	8,184	261,607	5,550	78,483	165,282	3,473,208	7.9	21,014
2001	9,513	369,689	5,694	92,039	170,972	4,006,345	15.3	23,433
2002 [a]	10,516	448,243	5,629	97,482	177,072	4,438,853	10.8	25,068
2003	12,024	514,545	5,713	106,693	181,868	4,876,488	9.9	26,813

(a) Figures revised in 2003

Table 14 Solvency test (dollars in millions)

*Valuation Date (as of June 30)	Aggregate Accrued Liabilities For			Actuarial Value of Assets	Funding of Liabilities		
	(1) Active Member Contributions On Deposit	(2) Future Benefits to Benefit Recipients	(3) Service Already Rendered by Active Members		(1)	(2)	(3)
1995	$14,478	$25,416	$23,497	$55,207	100.0%	100.0%	65.2%
1997	17,041	29,127	23,684	67,980	100.0	100.0	92.1
1998	18,451	31,158	24,625	77,290	100.0	100.0	112.4
1999 [a]	19,940	33,019	33,390	90,001	100.0	100.0	110.9
2000	21,337	36,238	35,549	102,225	100.0	100.0	125.6
2001 [b]	22,661	41,513	45,707	107,654	100.0	100.0	95.1

**No actuarial report is prepared in even-numbered years, except for the June 30, 1998 and June 30, 2000 reports. No estimation using actuarial methodology is made in years between valuations.*

(a) Effective January 1, 1999, program changed to increase retirement multiplier and add career factor and service credit for unused sick leave.

(b) Effective January 1, 2001, program changed to provide one-year final compensation with 25 years of service, Longevity Bonus with 30 or more years of service, and an ad hoc improvement of up to 6 percent monthly, depending upon benefit effective date.

Table 15 Analysis of financial experience (gains and losses in unfunded actuarial obligation resulting from differences between assumed and actual experience) (dollars in billions)

	Actuarial Valuation as of June 30	
	2001	2000
Actuarial Obligation at June 30:	$93,124 (2000)	$86,349 (1999)
2000 Benefits Increase	5,606	
Normal Cost	3,006	2,692
Benefit Payments	(3,842)	(3,515)
Expected Interest	7,985	6,983
Expected Actuarial Obligation at June 30:	105,879	92,509
Expected Actuarial Value of Assets at June 30:	114,075	100,659
Expected Unfunded Actuarial Obligation at June 30:	(8,196)	(8,150)
Actuarial (Gains) & Losses		
Change in Asset Method		
Change in Actuarial Assumptions		
Investment Return Assumption	6,421	(1,566)
Demographic Assumptions	3,752	260
Net Change Other Sources	250	355
Total Actuarial (Gains) & Losses	10,423	(951)
Unfunded Actuarial Obligation at June 30:	2,227	(9,101)

Effective January 1, 2001

- Final compensation based upon the highest average consecutive 12-month period with 25 years of credited service
- 25 percent of the 8 percent member contributions to the Defined Benefit Program allocated to the new Defined Benefit Supplement Program
- Longevity Bonus of an additional $200, $300 or $400 per month in Defined Benefit Program benefits with 30, 31 or 32 or more years of credited service.

The most recent actuarial valuation of the system (as of June 30, 2001) determined there is an unfunded actuarial obligation for this program. The prior actuarial valuation (as of June 30, 2000) indicated there was no unfunded actuarial obligation.

With the exception of the actuarial valuations performed as of June 30, 1998, and June 30, 2000, actuarial valuations are performed every two years in odd- numbered years to analyze the sufficiency of the statutory contributions to meet the current and future obligations of the program. By using the actuarial methods and assumptions adopted by the Teachers' Retirement Board, the actuarial valuation provides the best estimate of the program's long-term financing.

Comparing the unfunded actuarial obligation as of two valuation dates does not provide enough information to determine if there were actuarial gains or losses. The correct comparison is between the unfunded actuarial obligation on the valuation date and the expected unfunded actuarial obligation projected from the prior valuation date using the actuarial assumptions in effect for the period of comparison.

Table 15 shows the actuarial obligation and the elements to project that figure forward: the normal cost less benefit payments, plus a charge for interest at the assumed rate. In addition, the table shows actuarial gains, in parentheses, and losses by individual component.

Actuarial gains reduce the unfunded actuarial obligation as of the valuation date, and actuarial losses increase the unfunded actuarial obligation. Most actuarial gains and losses are a result of short-term fluctuations in experience or changes in actuarial assumptions. Because of the long-term nature of actuarial assumptions, future patterns of emerging experience may offset these short-term fluctuations.

INDEPENDENT ACTUARIAL REVIEW

Actuarial services for the California State Teachers' Retirement System are provided under contract by a qualified independent actuarial firm, with additional review provided by the staff actuary.

The work performed for CalSTRS by the independent actuarial firm may be reviewed by the Bureau of State Audits, at

the discretion of the Teachers' Retirement Board. Also, through the competitive bid process, the work of a prior actuary will be verified in a subsequent actuarial valuation performed by a new contract actuary. Should the same actuarial firm continue for a period of 10 years, provision is made for an independent review of that firm's work through an actuarial audit completed by another firm. These audit services are acquired using the competitive bid process.

The current actuarial consultant was retained on January 15, 2000, as a result of the competitive bid process.

SUMMARY OF DEFINED BENEFIT PROGRAM PROVISIONS

(The following summary and tables were prepared by the CalSTRS staff. All information is considered in the June 30, 2001, actuarial valuation.)

Normal Retirement

Eligibility Requirement

Age 60 with five years of credited service.

Allowance

2 percent of final compensation for each year of credited service.

Early Retirement

Eligibility Requirement

Age 55 with five years of credited service, or age 50 with 30 years of credited service.

Benefit Reduction

A $^{1}/_{2}$ percent reduction in the normal retirement allowance for each full month or partial month the member is younger than age 60, plus a reduction of $^{1}/_{4}$ percent for each full month or partial month the member is younger than age 55.

Late Retirement

Allowance

Members continue to earn additional service credit after age 60. The 2 percent age factor increases by 0.033 percent for each quarter year of age that the member is over age 60, up to a maximum of 2.4 percent.

Deferred Retirement

Allowance

Any time after satisfying the minimum service requirement, a member may cease active service, leave the accumulated contributions on deposit, and later retire upon attaining the minimum age requirement.

Allowance Factors

Credited Service

For each year of membership, credited service is granted based on the ratio of salary earned to full-time salary earnable for one position.

Final Compensation

Average salary earnable for the highest three consecutive years of credited service for one position. For members with 25 years of service, the calculation is based on the highest average compensation earnable in a consecutive 12-month period.

Sick Leave Service Credit

Credited service is granted for unused sick leave at the time of retirement. Sick Leave Service Credit cannot be used for eligibility for One-Year Final Compensation, the Career Bonus nor the Longevity Bonus.

Career Factor

If a member has thirty years of credited service, the age factor is increased by 0.2 percent. However, the maximum age factor is 2.4 percent.

Longevity Bonus

For members attaining 30 years of service by January 1, 2011, a longevity bonus of $200 per month is added to the unmodified allowance. The bonus is increased to $300 per month with 31 years of service, and $400 per month with 32 or more years of service.

Post-Retirement Benefit Adjustment

Benefit Improvement Factor

2 percent simple increase on September 1 following the first anniversary of the effective date of the allowance, applied to all continuing allowances.

IRC Section 415

Benefits are subject to limits imposed under Internal Revenue Code Section 415. However, no limits are imposed in the valuation of the Defined Benefit Program in order to address the potential pay-as-you-go funding needs of the Teachers' Replacement Benefits Program Fund.

Disability Allowance – Coverage A

Eligibility Requirement

Member has five years of credited California service and has not attained age 60.

Allowance

50 percent of final compensation

or

5 percent of final compensation for each year of service credit if over age 45 with less than 10 years of service credit.

Children's Benefit

10 percent for each eligible dependent child, up to a maximum of 40 percent of final compensation. The increment for each eligible child continues until the child marries or attains age 22. The provision that, beginning in 2002, children not registered as full-time students will retain eligibility only up to age 18 was repealed.

Offsets

Allowance, including children's increment, is reduced by disability benefits payable under Social Security, Workers' Compensation and employer-paid income protection plan.

Disability Allowance – Coverage B

Eligibility Requirement

Member has five years of credited California service.

Allowance

50 percent of final compensation, regardless of age and service credit.

Children's Benefit

10 percent for each eligible child up to four children, for a maximum of 40 percent of final compensation. The increment for each child continues until the child attains age 21, regardless of student, marital or employment status.

Offsets

The member's allowance is reduced by disability benefits payable under Workers' Compensation.

Death Before Retirement – Coverage A

Eligibility Requirement

One or more years of service credit for active members or members receiving a disability allowance.

Lump-Sum Payment

The one-time death benefit recipient receives a $6,010 lump-sum payment. If there are no surviving spouse or eligible children, the contributions and interest are paid to the designated beneficiary.

Allowance

The surviving spouse with eligible children will receive a family benefit of 40 percent of final compensation for as long as there is at least one eligible child. An additional 10 percent of final compensation is payable for each eligible child up to a maximum benefit of 90 percent.

If there is no surviving spouse, an allowance of 10 percent of final compensation is payable to eligible children up to a maximum benefit of 50 percent.

When there are no eligible children, the spouse may elect to receive one half of a 50 percent joint and survivor allowance projected to age 60 or take a lump-sum payment of the remaining contributions and interest.

Death Before Retirement – Coverage B

Eligibility

One or more years of service credit for active members.

Lump-Sum Payment

The one-time death benefit recipient receives a $24,040 lump-sum payment. If there is no surviving spouse, the contributions and interest are paid to the designated beneficiary.

Allowance

A lump-sum payment of the contributions and interest.

or

One half of a 50 percent joint and survivor allowance, beginning on the member's 60th birthday or immediately with a reduction based on the member and spouse's age at the time the benefit begins.

If the surviving spouse elects a monthly allowance, each eligible child would receive 10 percent of the member's final compensation, with a maximum benefit of 50 percent.

Death After Retirement

Lump-Sum Payment

The one-time dealth benefit recipient receives a $6,010 lump-sum payment.

Annuity Form

If the retired member had elected one of the joint and survivor options, the retirement allowance would be modified in accordance with the option selected.

If no option had been elected, payment of the unpaid contributions and interest, if any, remaining in the member's account will be made to the deceased member's estate.

Termination from CalSTRS

Refund

Refund of the member's contributions with interest as credited to the member's account to date of withdrawal. A refund terminates membership and all rights to future benefits from the system.

Re-entry After Refund

Former members who re-enter the system may redeposit all amounts previously refunded plus regular interest.The member must earn one year of credited service after re-entry before becoming eligible for system benefits.

Funding

Member Contribution

Eight percent of creditable compensation. Two percent of creditable compensation is directed to the Defined Benefit Supplement Program through December 31, 2010, while six percent of creditable compensation remains with the Defined Benefit Program.

Employers Contribution

Eight percent of the total creditable compensation on which member contributions are based. In addition, funding for the Teachers' Health Benefits Fund is directed as needed from the employer contributions on a pay-as-you-go basis.

plus

0.25 percent of the total creditable compensation on which members' contributions are based to pay costs for unused sick leave service credit.

State Contribution

The state pays 1.975 percent of the total creditable compensation of the immediately preceding calendar year upon which members' contributions are based, calculated annually on October 1 and paid in four equal quarterly payments. Used to fund certain benefit enhancements effective January 1, 1999.

plus

Up to 1.505 percent of the total creditable compensation of the immediately preceding calendar year upon which members' contributions are based, calculated annually on October 1 and paid in four equal quarterly payments. This contribution is made if there is an unfunded obligation or normal cost deficit for benefits in effect on July 1, 1990.

CHANGES IN DEFINED BENEFIT PROGRAM PROVISIONS

Since the last actuarial valuation, program amendments have been made that would affect the next actuarial valuation. The amendments described below were not considered for the June 30, 2001 actuarial valuation as they were effective after that date.

Effective January 1, 2002

Family Allowance

The education code requirement under Coverage A was repealed for a dependent child between the ages of 18 and 22.

Effective July 1, 2002

Creditable Service

The definition of creditable service was expanded to include activities that were previously considered non-creditable. No more than one full year of service credit is allowed during any school year, however, and the contributions for any service in excess of one year are deposited to the member and employer contribution accounts within the DBS Program.

Death Before Retirement – Coverage A

Lump-Sum Payment

The one-time death benefit increased to $6,163. If there are no surviving spouse or eligible children, the contributions and interest are paid to the one-time death benefit recipient.

Death Before Retirement – Coverage B

Lump-Sum Payment

The one-time death benefit increased to $24,652. If there is no surviving spouse, the contributions and interest are paid to the one-time death benefit recipient.

Death After Retirement

Lump-Sum Payment

The one-time death benefit increased to $6,163.

Defined Benefit Supplement Program
Actuary's Certification Letter

A MILLIMAN GLOBAL FIRM

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November 18, 2003

Teachers' Retirement Board
California State Teachers' Retirement System

Re: Valuation of the Defined Benefit Supplement Program

Dear Members of the Board:

We have performed an actuarial valuation of the Defined Benefit Supplement Program of the California State Teachers' Retirement System as of June 30, 2002. Our findings indicate the projected income stream from the contributions will be sufficient to pay the Normal Costs. However, the DBS Program had an Unfunded Actuarial Obligation of $51,292,000 as of June 30, 2002, which will be amortized in the future by earnings in excess of the Minimum Interest Rate or supplemental employer contributions.

Actuarial valuations are performed as of June 30 of each year.

In preparing the 2002 valuation, we relied upon the financial and membership data furnished by the System. Although we did not audit this data, we compared the data for this and the prior valuation and tested for reasonableness. Based on these tests, we believe the data to be sufficiently accurate for the purposes of our calculations.

Milliman did not prepare Schedules I and II, nor the summary of actuarial methods and assumptions in Schedule II of the Financial Section, nor the information included in this Actuarial Section of the 2003 Comprehensive Annual Financial Report. However, the actuarial information contained in Schedule I of the Financial Section and in this Actuarial Section was derived from our June 30, 2002 actuarial valuation report.

The Teachers' Retirement Board has sole authority to determine the actuarial assumptions and methods used for the DBS Program. The Board adopted all of the actuarial methods and assumptions used in the 2002 valuation.

The findings have been determined according to actuarial assumptions and methods that were chosen on the basis of recent experience of the DBS Program and of current expectations concerning future economic conditions. In our opinion, the assumptions used in the actuarial valuation are appropriate for purposes of the valuation, are internally consistent, and reflect reasonable expectations. The assumptions represent our best estimate of future conditions affecting the DBS Program. Nevertheless, the emerging costs of the DBS Program will vary from those presented in this report to the extent that actual experience differs from that projected by the assumptions.

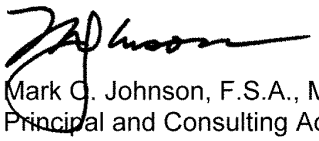
The actuarial valuation was prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the applicable

Standards of Practice adopted by the Actuarial Standards Board of the American Academy of Actuaries. In addition, the assumptions and methods used meet the parameters set for disclosures by Statement No. 25 of the Governmental Accounting Standards Board.

The undersigned is an independent actuary, a Fellow of the Society of Actuaries, a Member of the American Academy of Actuaries, an Enrolled Actuary, and experienced in performing valuations for large public employee retirement systems.

In conclusion, the DBS Program of the California State Teachers' Retirement System is an actuarially sound system based on the current actuarial assumptions.

Respectfully submitted,



Mark C. Johnson, F.S.A., M.A.A.A., E.A.
Principal and Consulting Actuary

Defined Benefit Supplement Program

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

CalSTRS, through its consulting actuary, will perform an experience study at least every four years to determine appropriate demographic and economic assumptions. These assumptions are then applied every year when the consulting actuary performs an actuarial valuation to monitor the funding status of the Defined Benefit Supplement Program. The first actuarial valuation was completed June 30, 2002, and adopted by the Teachers' Retirement Board June 5, 2003. The following summary and tables were prepared by CalSTRS staff. All information is considered in the June 30, 2002, actuarial valuation.

The Defined Benefit Supplement Program was established January 1, 2001 and, therefore, has not yet existed for a sufficient period of time to allow completion of the first experience study. The economic and demographic assumptions were based on those adopted for the Defined Benefit Program by the Board on February 3, 2000, and used to complete the latest actuarial valuation. Both the Defined Benefit Program and Defined Benefit Supplement Program share the same population, so it is reasonable to use most of the same assumptions for both programs. Following are the assumptions adopted by the Teachers' Retirement Board for this program.

- Investment return rate is 8.00 percent
- Method used to value plan assets for actuarial valuation purposes: Fair market value.
- Assumption for general wage increase is 4.25 percent, of which 3.5 percent is due to inflation and .75 percent is due to expected gains in productivity.
- The actuarial cost method used by the program is the traditional unit cost credit method.
- The Defined Benefit Supplement Program does not provide cost-of-living adjustments for benefit recipients.

Discussion of recent changes in:

The nature of the program–The Defined Benefit Supplement Program is a relatively new program, established January 1, 2001. All provisions of the program were considered when completing the most recent actuarial valuation.

Actuarial Assumptions–The following assumptions were used to complete the valuation for this program.

Neither the economic nor the demographic assumptions for the actuarial valuation as of June 30, 2002, affected the unfunded actuarial obligation. Those assumptions for this program will have minimal impact under the traditional unit credit cost method or only have significance when participants elect to annuitize the account balance. Under the program, a member must have at least $3,500 in his or her account to elect to annuitize the account balance.

Table 1 Post-retirement mortality table for sample ages

Age	Male	Female
	1999 CalSTRS Retired–M	1999 CalSTRS Retired–F
50	0.19%	0.12%
55	0.32	0.19
60	0.56	0.34
65	1.02	0.67
70	1.80	1.18
75	2.85	1.83
80	5.02	3.78
85	9.42	6.50
90	14.75	11.63
95	23.36	18.62

Table 2 Probabilities of retirement for sample ages

Age	Male	Female
55	5.0%	6.0%
60	20.0	12.0
65	20.0	19.0
70	100.0	100.0

ACTUARIAL METHODS

Actuarial Cost Method	Traditional Unit Credit
Asset Valuation Method	Fair Market Value

The actuarial methods used for the program's actuarial valuation as of June 30, 2002, result in an unfunded actuarial obligation of $51,292,000.

CalSTRS contracts for many actuarial services. The current contractor, Milliman USA, has been CalSTRS' actuary since January 15, 2000.

There are no other specific assumptions that have a material impact on valuation results for this program.

INDEPENDENT ACTUARIAL REVIEW

Actuarial services for the California State Teachers' Retirement System are provided under contract by a qualified independent actuarial firm, with additional review provided by the staff actuary.

The work performed for CalSTRS by the independent actuarial firm may be reviewed by the Bureau of State Audits at the discretion of the Teachers' Retirement Board. Also, through the competitive bid process, the work of a prior actuary will be

Table 3 Probabilities of withdrawal from active service before age and service retirement for sample ages

	Entry Ages				
Duration	**Under 25**	**25–29**	**30–34**	**35–39**	**40+**
Male					
1	12.5%	12.5%	12.5%	12.5%	12.5%
2	9.5	9.5	9.2	9.2	9.5
3	7.7	6.8	6.8	6.8	7.2
4	5.8	5.8	5.8	5.8	6.2
5	5.0	4.2	4.2	4.2	4.2
10	2.0	2.0	2.0	2.0	2.4
15	1.1	1.1	1.1	1.2	
20	0.6	0.6	0.6		
25	0.5	0.5			
30	0.3				
35	0.3				
40	0.3				
Female					
1	10.0%	10.0%	10.0%	10.0%	10.0%
2	8.3	8.3	8.3	7.5	6.8
3	7.7	7.3	6.5	5.5	5.3
4	7.1	7.1	5.6	4.5	4.0
5	5.5	5.8	4.2	3.5	3.0
10	2.3	2.0	1.7	1.4	1.6
15	1.1	0.9	1.0	0.9	
20	0.6	0.7	0.9		
25	0.6	0.6			
30	0.3				
35	0.3				
40	0.3				

Table 4 Assumption for pay increases due to promotions and longevity for sample ages (exclusive of the assumed general wage increase, which includes inflation)

	Entry Ages					
Duration	**Under 25**	**25–29**	**30–34**	**35–39**	**40–44**	**45 +**
1	5.7%	5.3%	5.1%	4.9%	4.9%	3.5%
10	3.2	3.0	2.7	2.3	2.2	1.6
20	1.3	1.2	1.1	0.8	0.8	0.6
30	0.9	0.7	0.6	0.5		

Table 5 Economic assumptions

Consumer Price Inflation	3.5%
Investment Yield	8.00
Wage Inflation	4.25
Interest on Member Accounts	8.00

Table 6 Mortality assumptions

Retired Members	
Male	1999 CalSTRS Retired-M
Female	1999 CalSTRS Retired-F
Active Members	
Male	1999 CalSTRS Retired-M (-2)
Female	1999 CalSTRS Retired-F (-2)
Beneficiaries	
Male	1999 CalSTRS Beneficiary-M
Female	1999 CalSTRS Beneficiary-F

verified in a subsequent actuarial valuation performed by a new contract actuary. Should the same actuarial firm continue for a period of 10 years, provision is made for an independent review of that firm's work through an actuarial audit completed by another firm. These audit services are acquired using the competitive bid process.

The current actuarial consultant was retained on January 15, 2000, as a result of the competitive bid process.

Table 7 Termination from disability due to death

Male	1994 GAM-M (Min. 2.5% with select rates in first 3 years)
Female	1994 GAM-F (Min. 2.2% with select rates in first 3 years)

Table 8 Service retirement (sample ages)

Male	
55	5.0%
60	20.0
65	20.0
70	100.0
Female	
55	6.0%
60	12.0
65	19.0
70	100.0

Table 9 Disability rates (samples ages)

		Entry Age Under 40	Entry Age 40+
Male	25	0.021%	
	30	0.030	
	35	0.051	
	40	0.120	
	45	0.150	0.196%
	50	0.195	0.288
	55	0.270	0.390
Female	25	0.030%	
	30	0.030	
	35	0.051	
	40	0.090	
	45	0.141	0.231%
	50	0.231	0.360
	55	0.318	0.459

Table 10 Withdrawal, all terminations

Rates of termination by sample duration of membership and sample entry age

	Sample Entry Ages				
Duration	**Under 25**	**25–29**	**30–34**	**35–39**	**40+**
Male					
1	12.5%	12.5%	12.5%	12.5%	12.5%
2	9.5	9.5	9.2	9.2	9.5
3	7.7	6.8	6.8	6.8	7.2
4	5.8	5.8	5.8	5.8	6.2
5	5.0	4.2	4.2	4.2	4.2
10	2.0	2.0	2.0	2.0	2.4
15	1.1	1.1	1.1	1.2	
20	0.6	0.6	0.6		
25	0.5	0.5			
Female					
1	10.0%	10.0%	10.0%	10.0%	10.0%
2	8.3	8.3	8.3	7.5	6.8
3	7.7	7.3	6.5	5.5	5.3
4	7.1	7.1	5.6	4.5	4.0
5	5.5	5.8	4.2	3.5	3.0
10	2.3	2.0	1.7	1.4	1.6
15	1.1	0.9	1.0	0.9	
20	0.6	0.7	0.9		
25	0.6	0.6			

Table 11 Promotional salary increases (assumption for salaries due to promotions and longevity, exclusive of the assumed general wage increase)

	Entry Ages					
Duration	**Under 25**	**25–29**	**30–34**	**35–39**	**40–44**	**45+**
1	5.7%	5.3%	5.1%	4.9%	4.9%	3.5%
10	3.2	3.0	2.7	2.3	2.2	1.6
20	1.3	1.2	1.1	0.8	0.8	0.6
30	0.9	0.7	0.6	0.5		

Table 12 Schedule of active member valuation data

Date (as of June 30)	Number	Annual Payroll	Annual Average Pay	% Increase In Average Pay
2001	428,741*	$20,494,152	$47,801	na
2002	442,208	21,731,775	49,144	2.810%

**The Defined Benefit Supplement Program was established January 1, 2001. The first actuarial valuation was conducted for the program as of June 30, 2002; however an actuarial study was performed as of June 30, 2001.*

Table 13 Schedule of retired members and beneficiaries added to and removed from rolls

	Added to Rolls*		Removed from Rolls		Rolls–End of Year			
Date (as of June 30)	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances	% Increase in Annual Allowances	Average Annual Allowances
2001	0	$0	0	$0	0	$0	0%	$0
2002	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0

** The Defined Benefit Supplement Program was established January 1, 2001. As of June 30, 2003 all members who have retired or become disabled have elected a lump-sum distribution. No annuities have been paid.*

SUMMARY OF DEFINED BENEFIT SUPPLEMENT PROGRAM PROVISIONS

(The following tables and summary were prepared by CalSTRS staff. All information is considered in the June 30, 2002, actuarial valuation.)

Membership

Eligibility Requirement

All members of the Defined Benefit Program who perform creditable service and earn creditable compensation after December 31, 2000, have a Defined Benefit Supplement account.

Member

An eligible employee with creditable service subject to coverage, who has contributions credited in the Program or is receiving an annuity from the Program.

Account Balance

Account Balance

Nominal accounts are established for the purpose of determining DBS benefits payable to the member. Accounts are credited with contributions, interest at the minimum interest rate, and, if applicable, additional earnings credits.

Contributions

One-quarter of the 8 percent of member contributions on creditable compensation is allocated to the member's DBS account through December 31,2010.

Minimum Interest Rate

Annual rate determined for the plan year by the Teachers' Retirement Board in accordance with federal laws and regulations. The minimum interest rate is equal to the average of the yields on 30-year Treasuries for the twelve months ending in February preceding the beginning of the plan year, rounded to the next highest 0.25 percent. The minimum interest rate is not less than the rate at which interest is credited under the Defined Benefit Program.

Additional Earnings Credit

Annual rate determined for the plan year by the Teachers' Retirement Board based on the actual earnings during the plan year but only to the extent the earnings are sufficient to credit the minimum interest rate and provide any additions to the gain and loss reserve deemed warranted by the board.

Table 14 Solvency Test

Valuation Date (as of June 30)	Aggregate Accrued Liabilitites for (1) Active Member Contributions on Deposit	(2) Future Benefits to Benefit Recipients	(3) Service Already Rendered by Active Members	Actuarial Value of Assets	Funding of Liabilities (1)	(2)	(3)
2001*	$213,169	$0	$0	$206,916	97.0%	na	na
2002	711,440	0	0	660,148	93.0	na	na

**The Defined Benefit Supplement Program was established January 1, 2001. The first actuarial valuation was conducted for the program as of June 30, 2002; however an actuarial study was performed as of June 30, 2001.*

Table 15 Analysis of financial experience

	Actuarial Valuation as of June 30 2002	2001
Actuarial Accrued Liability	$711,440,000	$213,169,000
Actuarial Value of Assets	660,148,000	206,916,000
Unfunded Actuarial Accrued Liability (UAAL)	51,292,000	6,253,000
Funded Ratio	93%	97%

Additional Annuity Credit
Annual rate determined for the plan year by the Teachers' Retirement Board based on the actual earnings during the plan year, but only to the extent the earnings are sufficient to credit the minimum interest rate and provide any additions to the gain and loss reserve deemed warranted by the Board.

Normal Retirement

Eligibility Requirement
Receipt of a corresponding benefit under the Defined Benefit Program.

Benefit
The account balance at the benefit effective date subject to limits imposed under Internal Revenue Code Section 415.

Form of Payment
The normal form of payment is a lump-sum distribution. Annuity options are available if the account balance is at least $3,500.

Early Retirement

Eligibility Requirement
Same as Normal Retirement.

Benefit and Form of Payment
Same as Normal Retirement.

Late Retirement

Benefit and Form of Payment
Same as Normal Retirement.
Contributions and earnings may continue to be credited to the account balance.

Deferred Retirement

Benefit
A member must receive a DBS benefit when the corresponding benefit is received under the Defined Benefit Program.

Disability Benefit

Eligibility Requirement
Receipt of a corresponding benefit under the DB Program.

Benefit
The account balance at the date the disability benefit becomes payable.

Form of Payment
Same as Normal Retirement. An annuity benefit is discontinued upon termination of the corresponding DB Program benefit.

Death Before Retirement

Eligibility Requirement
Deceased member has an account balance.

Benefit
The account balance at the date of death payable to the designated beneficiary.

Form of Payment
Similar to Normal Retirement.

Death After Retirement

Eligibility Requirement
The deceased member was receiving an annuity.

Benefit
According to the terms of the annuity elected by the member.

Termination from the Program

Eligibility Requirement
Termination of all CalSTRS-covered employment.

Benefit and Form of Payment
Lump-sum distribution of the account balance as of the date of distribution. The benefit is payable one year from the termination of creditable service.

CHANGES IN DEFINED BENEFIT SUPPLEMENT PROGRAM PROVISIONS

Since the last actuarial valuation, program amendments have been made that would affect the next actuarial valuation. The amendments described below were not considered for the June 30, 2002 actuarial valuation as they were effective after that date.

Effective July 1, 2002

Creditable Service
The definition of creditable service was expanded to include activities that were previously considered non-creditable. No more than one full year of service credit is allowed in the DB Program during any school year, however, and the contributions for any service in excess of one year are deposited to the member and employer contribution accounts within the DBS Program.

Cash Balance Benefit Program
Actuary's Certification Letter

A MILLIMAN GLOBAL FIRM

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November 18, 2003

Teachers' Retirement Board
California State Teachers' Retirement System

Re: Valuation of the Cash Balance Benefit Program

Dear Members of the Board:

We have performed an actuarial valuation of the Cash Balance Benefit Program of the California State Teachers' Retirement System as of June 30, 2002. Our findings indicate the projected income stream from the contributions will be sufficient to pay the Normal Costs. However, the CBB Program had an Unfunded Actuarial Obligation of $3,332,000 as of June 30, 2002, which will be amortized in the future by earnings in excess of the Minimum Interest Rate or supplemental employer contributions.

Actuarial valuations are performed as of June 30 of each year.

In preparing the 2002 valuation, we relied upon the financial and membership data furnished by the System. Although we did not audit this data, we compared the data for this and the prior valuation and tested for reasonableness. Based on these tests, we believe the data to be sufficiently accurate for the purposes of our calculations.

Milliman did not prepare Schedules I and II, nor the summary of actuarial methods and assumptions in Schedule II of the Financial Section, nor the information included in this Actuarial Section of the 2003 Comprehensive Annual Financial Report. However, the actuarial information contained in Schedule I of the Financial Section and in this Actuarial Section was derived from our June 30, 2002 actuarial valuation report.

The Teachers' Retirement Board has sole authority to determine the actuarial assumptions and methods used for the CBB Program. The Board adopted all of the actuarial methods and assumptions used in the 2002 valuation.

The findings have been determined according to actuarial assumptions and methods that were chosen on the basis of recent experience of the CBB Program and of current expectations concerning future economic conditions. In our opinion, the assumptions used in the actuarial valuation are appropriate for purposes of the valuation, are internally consistent, and reflect reasonable expectations. The assumptions represent our best estimate of future conditions affecting the CBB Program. Nevertheless, the emerging costs of the CBB Program will vary from those presented in this report to the extent that actual experience differs from that projected by the assumptions.

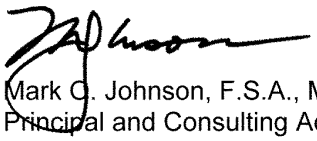
The actuarial valuation was prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the applicable

Standards of Practice adopted by the Actuarial Standards Board of the American Academy of Actuaries. In addition, the assumptions and methods used meet the parameters set for disclosures by Statement No. 25 of the Governmental Accounting Standards Board.

The undersigned is an independent actuary, a Fellow of the Society of Actuaries, a Member of the American Academy of Actuaries, an Enrolled Actuary, and experienced in performing valuations for large public employee retirement systems.

In conclusion, the CBB Program of the California State Teachers' Retirement System is an actuarially sound system based on the current actuarial assumptions.

Respectfully submitted,



Mark C. Johnson, F.S.A., M.A.A.A., E.A.
Principal and Consulting Actuary

Cash Balance Benefit Program

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

CalSTRS, through its consulting actuary, will perform an experience study at least every four years to determine appropriate demographic and economic assumptions. These assumptions are then applied every year when the consulting actuary performs an actuarial valuation to monitor the funding status of the Cash Balance Benefit Program. The most recent actuarial valuation was completed as of June 30, 2002, and adopted by the Teachers' Retirement Board June 5, 2003. The following summary and tables were prepared by CalSTRS staff. All information is considered in the June 30, 2002, actuarial valuation.

The Cash Balance Benefit Program was established July 1, 1996. The first experience study of the program was completed January 21, 2000. The experience study was adopted by the Teachers' Retirement Board on February 3, 2000, and used to complete the latest actuarial valuation. Following are the assumptions adopted by the Teachers' Retirement Board for this program.

- Investment return rate is 8.00 percent.
- Method used to value plan assets for actuarial valuation purposes: Fair market value.
- Assumption for general wage increase is 4.25 percent, of which 3.5 percent is due to inflation and .75 percent is due to expected gains in productivity.
- The actuarial cost method used by the program is the traditional unit credit cost method.
- The Cash Balance Benefit Program does not provide cost-of-living adjustments for benefit recipients.

Table 1 Post-retirement mortality table for sample ages

Age	Male	Female
	1999 CalSTRS Retired–M	1999 CalSTRS Retired–F
50	0.19%	0.12%
55	0.32	0.19
60	0.56	0.34
65	1.02	0.67
70	1.80	1.18
75	2.85	1.83
80	5.02	3.78
85	9.42	6.50
90	14.75	11.63
95	23.36	18.62

Table 2 Probabilities of retirement for sample ages

Age	Male	Female
55	5.0%	6.0%
60	20.0	12.0
65	20.0	19.0
70	100.0	100.0

Table 3 Probabilities of withdrawal from active service before age and service retirement for sample ages

	Entry Ages				
Duration	Under 25	25–29	30–34	35–39	40+
Males					
1	12.5%	12.5%	12.5%	12.5%	12.5%
2	9.5	9.5	9.2	9.2	9.5
3	7.7	6.8	6.8	6.8	7.2
4	5.8	5.8	5.8	5.8	6.2
5	5.0	4.2	4.2	4.2	4.2
10	2.0	2.0	2.0	2.0	2.4
15	1.1	1.1	1.1	1.2	
20	0.6	0.6	0.6		
25	0.5	0.5			
30	0.3				
35	0.3				
40	0.3				
Females					
1	10.0%	10.0%	10.0%	10.0%	10.0%
2	8.3	8.3	8.3	7.5	6.8
3	7.7	7.3	6.5	5.5	5.3
4	7.1	7.1	5.6	4.5	4.0
5	5.5	5.8	4.2	3.5	3.0
10	2.3	2.0	1.7	1.4	1.6
15	1.1	0.9	1.0	0.9	
20	0.6	0.7	0.9		
25	0.6	0.6			
30	0.3				
35	0.3				
40	0.3				

Discussion of recent changes in:

The nature of the program—The Cash Balance Benefit Program is a relatively new program, established July 1, 1996. All provisions of the program were considered when completing the most recent actuarial valuation.

Actuarial assumptions—The following assumptions were used to complete the valuation for this program.

Neither the economic nor the demographic assumptions for the actuarial valuation as of June 30, 2002, affected the unfunded actuarial obligation. Those assumptions for this program will have minimal impact under the traditional unit credit cost method or only have significance when participants elect to annuitize the account balance. Under the program, a participant must have at least $3,500 in his or her account to elect to annuitize the account balance.

ACTUARIAL METHODS

Actuarial Cost Method	Traditional Unit Credit
Asset Valuation Method	Fair Market Value

The actuarial methods used for the program's actuarial valuation as of June 30, 2002, result in an unfunded actuarial obligation of $3,332,000.

CalSTRS contracts for many actuarial services. The current contractor, Milliman USA, has been CalSTRS' actuary since January 15, 2000.

There are no other specific assumptions that have a material impact on valuation results for this program.

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The work performed for CalSTRS by the independent actuarial firm may be reviewed by the Bureau of State Audits at the discretion of the Teachers' Retirement Board. Also, through the competitive bid process, the work of a prior actuary will be verified in a subsequent actuarial valuation performed by a new contract actuary. Should the same actuarial firm continue for a period of 10 years, provision is made for an independent review of that firm's work through an actuarial audit completed by another firm. These audit services are acquired using the competitive bid process.

The current actuarial consultant was retained on January 15, 2000, as a result of the competitive bid process.

Table 4 Assumption for pay increases due to promotions and longevity for sample ages (exclusive of the assumed general wage increase, which includes inflation)

	Entry Ages					
Duration	**Under 25**	**25–29**	**30–34**	**35–39**	**40–44**	**45 +**
1	5.7%	5.3%	5.1%	4.9%	4.9%	3.5%
2	5.6	5.2	4.9	4.7	4.7	3.3
3	5.6	5.0	4.8	4.6	4.6	3.0
4	5.5	4.9	4.6	4.4	4.4	2.9
5	5.5	4.8	4.5	3.8	3.8	2.6
10	3.2	3.0	2.7	2.3	2.2	1.6
15	1.5	1.5	1.4	1.1	1.1	0.8
20	1.3	1.2	1.1	0.8	0.8	0.6
25	1.1	1.0	0.9	0.6	0.6	
30	0.9	0.7	0.6	0.5		
35	0.8	0.7	0.6			
40	0.8	0.7				
45	0.8					

Table 5 Economic assumptions

Consumer Price Inflation	3.5%
Investment Yield	8.00
Wage Inflation	4.25
Interest on Member Accounts	8.00

Table 6 Mortality assumptions

Retired Members	
Male	1999 CalSTRS Retired-M
Female	1999 CalSTRS Retired-F
Active Members	
Male	1999 CalSTRS Retired-M (-2)
Female	1999 CalSTRS Retired-F (-2)
Beneficiaries	
Male	1999 CalSTRS Beneficiary-M
Female	1999 CalSTRS Beneficiary-F

Table 7 Termination from disability

Male	1994 GAM-M (Min. 2.5% with select rates in first 3 years)
Female	1994 GAM-F (Min. 2.2% with select rates in first 3 years)

Table 8 Service retirement (sample ages)

Male	
55	5.0%
60	20.0
65	20.0
70	100.0
Female	
55	6.0%
60	12.0
65	19.0
70	100.0

Table 9 Disability rates (sample ages)

		Entry Age Under 40	Entry Age 40+
Male	25	0.021%	
	30	0.030	
	35	0.051	
	40	0.120	
	45	0.150	0.196%
	50	0.195	0.288
	55	0.270	0.390
Female	25	0.030%	
	30	0.030	
	35	0.051	
	40	0.090	
	45	0.141	0.231%
	50	0.231	0.360
	55	0.318	0.459

Table 10 Withdrawal rates (rates of termination by sample durations of membership and sample entry ages.)

	Sample Entry Ages				
Duration	**Under 25**	**25–29**	**30–34**	**35–39**	**40+**
Male					
1	12.5%	12.5%	12.5%	12.5%	12.5%
2	9.5	9.5	9.2	9.2	9.5
3	7.7	6.8	6.8	6.8	7.2
4	5.8	5.8	5.8	5.8	6.2
5	5.0	4.2	4.2	4.2	4.2
10	2.0	2.0	2.0	2.0	2.4
15	1.1	1.1	1.1	1.2	
20	0.6	0.6	0.6		
25	0.5	0.5			
Female					
1	10.0%	10.0%	10.0%	10.0%	10.0%
2	8.3	8.3	8.3	7.5	6.8
3	7.7	7.3	6.5	5.5	5.3
4	7.1	7.1	5.6	4.5	4.0
5	5.5	5.8	4.2	3.5	3.0
10	2.3	2.0	1.7	1.4	1.6
15	1.1	0.9	1.0	0.9	
20	0.6	0.7	0.9		
25	0.6	0.6			

Table 11 Promotional salary increases (assumption for salaries due to promotions and longevity, exclusive of the assumed general wage increase)

	Sample Entry Ages (Unisex)					
Duration	**Under 25**	**25–29**	**30–34**	**35–39**	**40–44**	**45+**
1	5.7%	5.3%	5.1%	4.9%	4.9%	3.5%
10	3.2	3.0	2.7	2.3	2.2	1.6
20	1.3	1.2	1.1	0.8	0.8	0.6
30	0.9	0.7	0.6	0.5		

SUMMARY OF CASH BALANCE BENEFIT PROGRAM PROVISIONS

(The following tables and summary were prepared by CalSTRS staff. All information is considered in the June 30, 2002, actuarial valuation.)

Membership

Eligibility Requirement

Membership if employed at less than 50 percent of a full-time position for a California school district, community college district or county office of education that has elected to offer the Cash Balance Benefit Program.

Participant

An eligible employee with creditable service subject to coverage who has contributions credited in the program or is receiving an annuity from the program.

Account Balance

Account Balance

Nominal accounts established for the purpose of determining benefits payable to the participant. Accounts are credited with contributions, minimum interest rate and additional earnings credits.

Contributions

Generally, participant contributions are 4 percent of salary and employer contributions are 4 percent of salary.

Rules for contribution rates may differ for participants covered by a collective bargaining agreement, but the sum of the participant and employer contributions must equal or exceed 8 percent of salary, and in no event can the employer contribution rate be less than 4 percent of salary.

The Teachers' Retirement Board may adjust employer contributions for a fixed number of years, but the adjustment shall not exceed 0.25 percent of salaries in any plan year.

Minimum Interest Rate

Annual rate determined for the plan year by the Teachers' Retirement Board in accordance with federal laws and regulations. The minimum interest rate is equal to the average of the yields on 30-year Treasuries for the twelve months ending in February preceding the beginning of the plan year, rounded to the next highest 0.25 percent.

Additional Earnings Credit

Annual rate determined for the plan year by the Teachers' Retirement Board based on the actual earnings during the plan year, but only to the extent the earnings are sufficient to credit the minimum interest rate and provide any additions to the gain and loss reserve deemed warranted by the board.

Table 12 Schedule of active participant valuation data

Date (as of June 30)	Number	Annual Payroll	Annual Average Pay	% Increase In Average Pay
1998	3,505*	$18,832,000	$5,375	26.1%
1999	6,412*	50,426,000	7,864	46.3
2000	7,966	70,605,000	8,863	12.7
2001	11,274	97,921,000	8,686	(2.0)
2002	9,261	89,871,000	9,704	11.7

**Active particiants with account balances*

Table 13 Schedule of retired participants and beneficiaries added to and removed from rolls

	Added to Rolls		Removed from Rolls		Rolls–End of Year			
Date (as of June 30)	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances	% Increase in Annual Allowances	Average Annual Allowances
1998	0	$0	0	$0	0	$0	na	na
1999	0	0	0	0	0	0	na	na
2000	0	0	0	0	0	0	na	na
2001	0	0	0	0	0	0	na	na
2002	0	0	0	0	0	0	na	na

Table 14 Solvency test

Valuation Date (as of June 30)	Aggregate Accrued Liabilities For (1) Active Member Contributions On Deposit	(2) Future Benefits to Benefit Recipients	(3) Service Already Rendered by Active Members	Actuarial Value of Assets	Funding of Liabilities (1)	(2)	(3)
1997	$164,078	$0	$0	$(393,000)	-239.5%	na	na
1998	1,727,705	0	0	2,083,000	120.6	na	na
1999	5,000,613	0	0	5,224,000	104.4	na	na
2000	10,350,720	0	0	10,868,000	104.9	na	na
2001	16,938,474	0	0	15,768,000	93.0	na	na
2002	25,080,056	0	0	21,748,000	87.0	na	na

Table 15 Analysis of financial experience

	Actuarial Valuation as of June 30 2002	2001
Actuarial Accrued Liability	$25,080,056	$16,938,474
Actuarial Value of Assets	$21,748,000	$15,768,000
Unfunded Actuarial Accrued Liability (UAAL)	$3,332,000	$1,170,000
Funded Ratio	87%	93%

Additional Annuity Credit

Annual rate determined for the plan year by the Teachers' Retirement Board based on the actual earnings during the plan year, but only to the extent the earnings are sufficient to credit the Minimum Interest Rate and provide any additions to the Gain and Loss Reserve deemed warranted by the Board.

Normal Retirement

Eligibility Requirement

Age 60.

Benefit

The account balance at the retirement date subject to limits imposed under Internal Revenue Code Section 415.

Form of Payment

The normal form of payment is a lump-sum distribution. Annuity options are available if the sum of the employer and employee accounts equal or exceed $3,500.

Early Retirement

Eligibility Requirement

Age 55.

Benefit and Form of Payment

Same as Normal Retirement.

Late Retirement

Benefit and Form of Payment

Same as Normal Retirement. Contibutions and interest continue to be credited to the account balances until distributed.

Deferred Retirement

Benefit

A participant may cease active service, leave the accumulated account balance on deposit and later retire upon attaining the minimum age requirement.

Disability Benefit

Eligibility Requirement

Determination by the Teachers' Retirement Board that the participant has a total and permanent disability.

Benefit

The account balance at the date of disability. An annuity benefit is discontinued if the participant is re-employed before age 60 and performs service creditable under the program.

Form of Payment
Same as Normal Retirement.

Death Before Retirement

Eligibility Requirement
Deceased participant has an account balance.

Benefit
The account balance at the date of death payable to the designated beneficiary.

Form of Payment
Normal distribution is a lump-sum benefit. A participant's beneficiary may elect to receive the benefit in the form of either a single life annuity without a case refund feature or a period-certain annuity if the sum of the balance of credits to the participant's employee and employer accounts equals or exceeds $3,500.

Death After Retirement

Eligibility Requirement
The deceased participant was receiving an annuity.

Benefit
According to the terms of the annuity elected by the participant.

Termination from the Program

Eligibility Requirement
More than five years has elapsed since the most recent termination benefit, if any, has been paid.

Benefit and Form of Payment
Lump-sum distribution of the account balance as of the date of distribution. The benefit is payable one year from the termination of creditable service.

CHANGES IN CASH BALANCE BENEFIT PROGRAM PROVISIONS

There have been no program amendments that would affect an actuarial valuation of the Cash Balance Benefit Program since the last CalSTRS annual financial report was issued. All program provisions were considered in the completion of the June 30, 2002, actuarial valuation.

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